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Modification of Effluent Limitations Guidelines and Standards for pH Values for Point Sources That Continuously Monitor Their Effect

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 401

[WH-FRL 1626-3]

Modification of Effluent Limitations Guidelines and Standards for pH Values for Point Sources That Continuously Monitor Their Effluent

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) today proposes regulations that would adjust effluent limitations guidelines for pH (1) to require compliance of pH values 99% of the time measured on a monthly basis for industrial dischargers whose National Pollutant Discharge Elimination System (NPDES) permits require continuous monitoring of process wastewaters and (2) to limit the duration of individual excursions from the pH range.

The above proposal has evolved in response to a petition from a number of industrial companies which represent a variety of manufacturing point source categories. According to the petitioners, inherent limitations in the treatment technology for pH control prevented compliance with the pH standard 100 percent of the time. The pH standards were initially intended for use with grab and/or composite sampling procedures. However, with the introduction of continuous monitoring instrumentation via the NPDES permit requirements a more thorough monitoring/sampling procedure was applied in assessing the pH of effluent wastewater. The proposed adjustment to the standard will establish a standard for use with continuous monitoring that well-maintained and well-operated plants can realistically achieve and will reserve EPA and permittee resources for those instances where substantial pH control problems exist.

DATES: Comments on this proposed rule are due February 9, 1981.

ADDRESSES: Comments should be addressed to Russell Roegner, Water Regulations and Standards (WH-586), U.S. Environmental Protection Agency, 401 M St., SW, Washington, D.C. 20460.

The official record upon which this proposed regulation was based is available for inspection at Room M2404, U.S. Environmental Protection Agency, 401 M St., SW, Washington, D.C. 20460 between 9:00 a.m. to 4:00 p.m., excluding federal holidays.

FOR FURTHER INFORMATION CONTACT: Russell Roegner, Water Regulations and Standards (WH-586), U.S. Environmental Protection Agency, 401 M St., SW, Washington, D.C. 20460 (202) 755-3642.

SUPPLEMENTARY INFORMATION:

I. Introduction

On August 3, 1978, a number of industrial companies, representing a variety of manufacturing point source categories, petitioned the Environmental Protection Agency seeking relief from the requirement that the pH value of their effluent, as measured on a continuous basis, always be within the range of 6.0 to 9.0 It was the contention of the petitioners that inherent limitations in the treatment technology for pH control prevented compliance with this standard 100 percent of the time and that provision for such unavoidable "excursions" from the prescribed range was warranted. The petition, accompanied by technical data and analysis, requested that the effluent limitations guidelines should be revised to allow excursions 1 percent of the time on a monthly basis. In addition, the petitioners suggested that a reporting requirement be established for individual excursions that were longer than 15 minutes in duration and that were extremely acidic or basic, *i.e.*, below pH 3.5 or above ph 11.

In response to the petition, EPA studied the control of pH in process wastewaters in selected industrial categories. A draft report, dated March 1979, confirmed in substance the principal contention of the petitioners that a plant treating highly acidic or basic streams typically cannot achieve, on a continuous basis, pH values within the range of 6.0 to 9.0 100 percent of the time. The data set forth in this report indicate that a well-designed, well-operated plant using continuous monitoring would record excursions outside the prescribed range approximately one percent of the time on a monthly basis ("Assessment of pH Control of Process Waters in Selected Plants", prepared by JRB Associates, Inc., McLean, Virginia, for EPA, Contract No. 68-01-33881 (March, 1979)). Another Agency study, focusing on the Inorganic Chemicals Manufacturing Point Source Category, also supports this conclusion ("pH Control of Industrial Waste Waters in the Inorganic Chemicals Industry", prepared by Jacobs Engineering Groups, Inc., Pasadena, California, for EPA Contract No. 68-01-5167 (October, 1979)). These reports are available for review. A background document supporting this proposed rule draws upon these reports and other materials, and is also available for review. The Agency would appreciate comment on any aspect of these reports.

These studies, whose findings are discussed below, have led the Agency to conclude tentatively that modification of the pH effluent limitations guidelines is warranted for those industrial dischargers that monitor the pH values of process wastewater on a continuous basis. For the reasons discussed below, the Agency proposes that, for these dischargers compliance with pH values must be attained 99% of the time on a monthly basis and that the duration of individual excursions for the prescribed range must not exceed 30 minutes.

This proposal and its underlying rationale relate solely to the control of pH values when process wastewater is monitored continuouly. This proposal does not reflect any change in the Agency position with respect to unintentional violations of other effluent limitations guidelines, such as BOD. Rather the proposal merely, recognizes that, when effluent process wastewater is monitored continuously, the standard for determining compliance with pH values should be adjusted. The Agency position with respect to other pollutant parameters rests on different bases, for which the "upset" provision contained in the Federal consolidated permit regulations accord a permittee sufficient protection. See 40 CFR 122.60(h), 45 FR 33448 (May 19, 1980).

In those regulations, EPA has established a mechanism to provide relief in appropriate instances, for plants which experience unintentional violations of prescribed effluent limits. A permittee who follows the reporting procedures set forth in the regulation may assert this provision as an affirmative defense in an enforcement action. The legal basis and rationale for this regulation are explained in the preamble to the revised NPDES permit regulations 44 FR 32854, 32863 (June 7, 1979).

EPA is convinced that this upset provision provides the appropriate measure and mechanism for providing relief for unintentional violations of effluent limitations guidelines whose derivation reflects the variations of wastewater characteristics occurring in normal operation. For the reasons discussed below, however, significant differences in both the development and operation of effluent limitations guidelines for pH warrant particular treatment for those industrial dischargers that are required to continuously monitor their effluent.

II. pH Limitations and Control

For virtually all industrial categories, the effluent limitations guidelines require control of pH between the range of 6.0 to 9.0. For certain industries, however, a different range was established; for example, plants in the secondary aluminum smelting subcategory of the non-ferrous metal manufacturing category were required to maintain the pH of their effluent between 7.5 to 9.0.

Unlike effluent limitations for other conventional pollutant parameters, the pH limitations do not reflect variability factors accounting for fluctuations occurring in the normal operation of treatment systems. For other limitations, such as BOD, EPA establishes different daily and monthly effluent limitations based on a statistical analysis of long-term performance data which takes into account these fluctuations. There are no separate daily and monthly effluent limitations for pH, on the other hand.

In setting these pH levels, data were obtained through the use of grab or composite samples of effluent. Grab samples represent the effluent at the moment of sampling; a composite sample is a collection of grab samples. Particularly in the case of the highly variable waste streams, these sampling techniques may not provide a wholly accurate picture of the effluent characteristics. The sampling results are dependent on when and how often the samples are drawn.

For many industrial plants NPDES permit-issuing authorities required the installation of continuous monitors for pH. This system uses an electronic probe, submerged in the effluent, which allows the recordation of pH values at all times. Unlike grab or composite sampling, therefore, all pH values outside the allowable pH range, *i.e.*, excursions, are detected.

In order to comply with NPDES permits incorporating BPT effluent limitations guidelines for pH, many industrial plants with highly acidic or basic waste streams installed control technology specifically designed to control pH within the prescribed range. The components of this technology measure the pH of the wastestreams in the treatment train, and on the basis of the pH measurement, add acid or base to the wastestream. As this system reacts to the pH value then present, there are fluctuations in the pH values. In more sophisticated systems, the addition of acid or base is done in multiple stages. This sequential method trims the fluctuations resulting from the introduction of acid or base, thus allowing better assurance that the pH will be in the prescribed range. Additional treatments may include the use of smoothing tanks or basins to dampen the fluctuations of pH values prior to discharge, and diversion systems to reroute wastewater outside the permissible pH range into a tank or basin for recycling into the treatment system.

The two Agency studies examined long-term pH data from 14 plants distributed among a number of industrial categories. Within the Inorganic Chemical category, eight subcategories were examined. These plants all employed advanced neutralization systems described above in which acid or base is added typically in multiple stages to correct the pH values of the effluent. In addition to reviewing the frequency and duration of pH excursions occurring at these plants, the studies determined the reason for the excursion. A number of "apparent" excursions, in which the recording of an excursion did not reflect the quality of the effluent, were excluded from the data base. An example of an apparent excursion is that caused in certain plants by the location of the probe in conjunction with the diversion system, resulting in recorded excursions when there was no discharge of effluent. Only "real" excursions, *e.g.*, those resulting from process/treatment system upsets, were included in the data base.

The data indicate that on an aggregated, long-term basis, all but one of the fourteen plants in the two Agency studies achieved compliance with the pH standards over 99 percent of the time. When examined on a monthly rather than long-term basis, the data show that 6 of the 14 plants maintained at least 99 percent compliance for periods of time covered in the Agency data bases, which is on average approximately 12 months per plant. Examining the data base on a plant month basis, 133 out of 152 plant months satisfied the requirements.

III. Agency Response to Petition

No plant examined in the course of this review consistently achieved 100 percent compliance with the pH limitation on a monthly basis. Plants employing continuous monitoring can expect numerous, short-term excursions of pH limitations a month. In this situation, sole reliance on the upset provision appears unwarranted as its use would not be reserved for a limited, exceptional class of incidents. Permittees would have a considerable burden in establishing occurrence of an upset and there would be a drain on administrative resources. Adjustment of the standard to require compliance 99 percent of the time when there is continuous monitoring will establish a standard that well-operated and well-maintained plants can realistically achieve and will reserve the resources of both EPA and permittees for those instances where there are substantial pH control problems.

EPA is mindful, and indeed troubled, by the potential for abuse that this adjustment carries. In denying industry's requests for excursion provisions for other pollutant parameters courts have emphasized two concerns: to ensure "swift and direct" enforcement of effluent limitations; and to avoid giving industry "a license to dump wastes at will" *Weyerhaeuser* v. *Costle*, 590 F.2d 1011, 1057 (D.C. Cir. 1978); *American Petroleum Institute* v. *EPA*, 540 F.2d 1023, 1036 (10th Cir. 1976).

In response to the first concern, EPA has expressed the proposed rule in simple terms. Determining compliance with pH limitations will remain straightforward. The regulation defines one percent of the time as 7 hours and 12 minutes (based on a 30-day month) which should allow easy computation of the time outside the range prescribed in the permit. Continuous monitors record the pH of effluent on strip charts, and the total length of time out of compliance and the length of individual excursions are readily determinable.

With respect to the second concern, EPA proposes to establish a limit on the length of individual excursions of 30 minutes. The word "excursion" has been defined in the regulation to mean an "unintentional and temporary" incident of noncompliance with the prescribed pH range. If the Agency has reason to believe that the permittee has intentionally exceeded the pH range regardless of its duration, EPA will take appropriate enforcement action against the permittee. The Agency is considering the inclusion of requirements analogous to certain of those contained in the upset provisions of section 122.60(h), e.g., a demonstration through signed, contemporaneous operating records that the facility was being properly operated and that the permittee responded promptly to the pH control problem. The Agency specifically requests comments on whether such requirements are appropriate.

The duration of individual excursion was selected primarily to reflect the length of time that a well-operated plant might need to respond to malfunctions in the treatment system and bring pH back to the permissible range. This number reflects EPA's judgment of the maximum time that an individual excursion should remain uncorrected at any plant. The Agency, however, is

seeking information on whether shorter limits on the duration of individual excursion, e.g., 15 minutes, are more appropriate to ensure prompt responses to pH excursions or whether a longer period, e.g., 60 minutes, is necessary to allow the permittee adequate time to correct the problem. If, because of such factors as plant configuration, diversion systems or the like, the permit-issuing authority believes that a particular plant is able to respond to pH excursions more quickly, the NPDES permit may require less time for individual excursions. And, of course, the permit-issuing authority may impose more stringent requirements if necessary for water quality considerations.

The Agency considered additional limits on pH values; for example, requiring any excursion regardless of duration to be within the range of pH 3.5 to pH 11.0. The data received in the course of Agency rulemaking did not, however, support the inclusion of such an additional limitation. Nonetheless, the Agency is requesting information on such a limitation.

IV. Proposed Rule

The proposed rule states that a permittee who is required to monitor the pH of its process wastewater continuously must maintain the pH of such process wastewater within the range set forth in the applicable effluent limitations guidelines so that the total time out of compliance shall not exceed 7 hours and 12 minutes in any calendar month and any individual excursion shall not exceed 30 minutes in duration. The permit-issuing authority is provided discretion to impose more stringent requirements necessary to meet water quality standards or other requirements of state or Federal law and to shorten the permissible duration of individual excursions.

Pursuant to Section 122.15(a)(3) of the consolidated permit regulations, industrial plants whose NPDES permits require continuous monitoring of the pH values of their effluent will be able to seek modification of their permits to incorporate the provisions of this rule if it is adopted. The Agency specifically requests comments and data on the following issues:

(1) Is the 30-minute limitation on individual excursions appropriate? Would, for example, a 15-minute or 60-minute limitation more accurately reflect the time necessary to correct excursions? Would other approaches or additional requirements better serve the objectives of forcing immediate action to rectify excursions and prevent the "banking" of acidic or basic wastes?

(2) The Agency's review indicates that this adjustment would entail no economic impacts beyond those imposed by existing regulations. Is this correct?

(3) Is the generic approach, *i.e.*, a single rule applicable to all existing pH limitations, appropriate?

(4) Is the establishment of an additional limitation requiring all excursions, regardless of duration, to be within pH 3.5 to pH 11.0 necessary and appropriate?

Comments on these questions and on any other aspect of the proposed rule should be directed to Russell Roegner before February 9, 1981 at the address listed above.

Dated: December 3, 1980.

Douglas M. Costle,

Administrator.

EPA proposes to amend Title 40 CFR Part 401 by adding a new § 401.17 as follows:

§ 401.17 pH Effluent Limitations Under Continuous Monitoring.

(a) Where a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to Section 402 of the Act requires continuous pH measurements of process wastewater, the permittee shall maintain the pH of such process wastewater within the range set forth in the applicable effluent limitations guidelines, except excursions from the range are permitted, provided:

(1) The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 12 minutes in any calendar month; and

(2) No individual excursion from the range of pH values shall exceed 30 minutes.

(b) The Director, as defined in § 122.3 of this chapter, may impose more stringent requirements than those set forth in paragraph (a) of this section (1) as required to meet water quality standards or other requirements of Federal or state law or (2), with respect to the length of individual excursions from the range of pH values, if a shorter period of time is appropriate based upon the treatment system, plant configuration of other factors.

(c) For purposes of this section, an "excursion" is an unintentional and temporary incident in which the pH value of process wastewater exceeds the range set forth in the applicable effluent limitations guidelines.

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